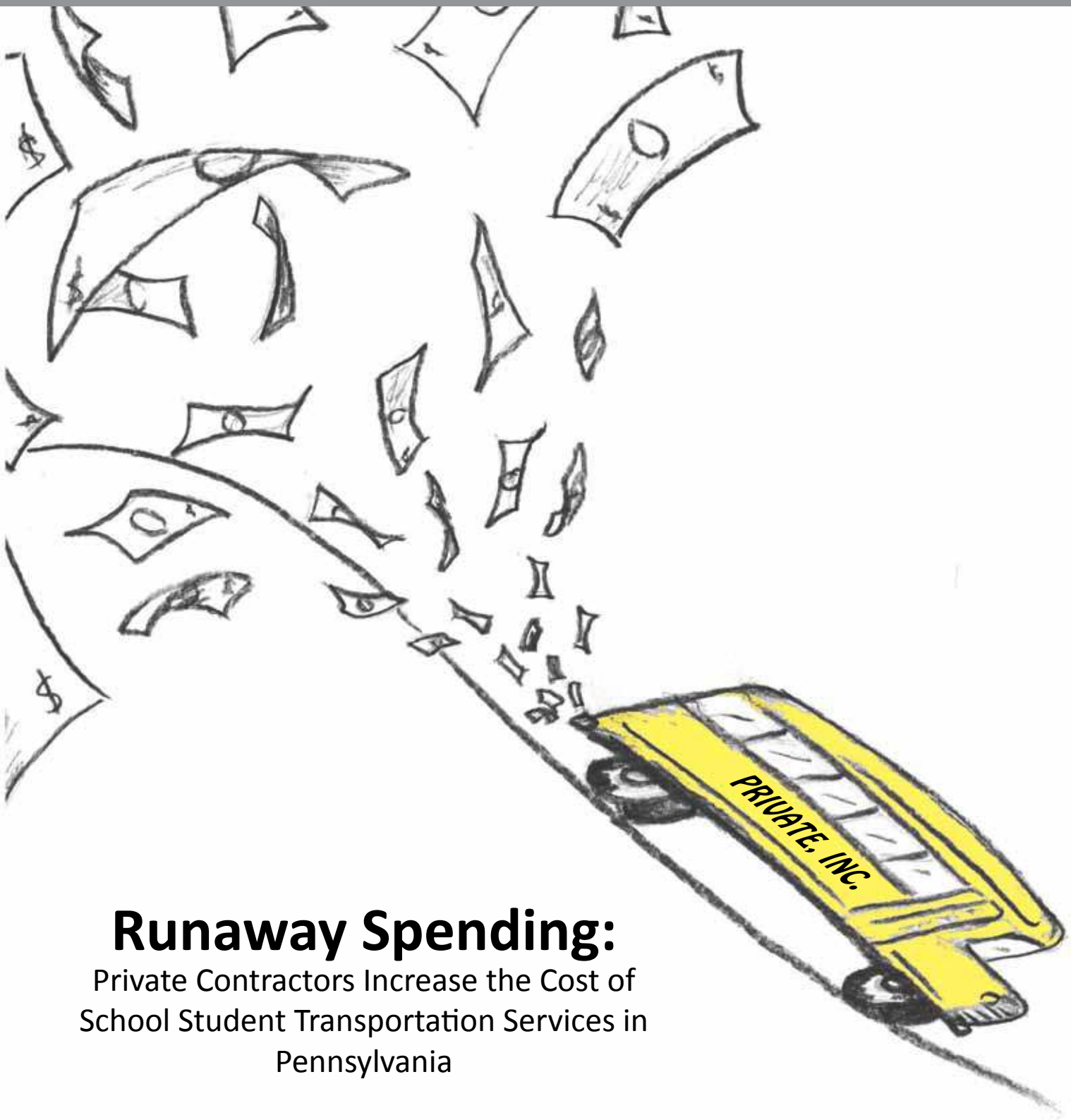

Runaway Spending:

Private Contractors Increase the Cost of School Student Transportation Services in Pennsylvania

By
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Executive Summary

This study examines the cost of transportation services for Pennsylvania's school districts, focusing especially on the impact on costs of contracting out. Using data from the Pennsylvania Department of Education from 1986 to 2008, the study statistically analyzes total costs, the costs to the state, and the costs to local school districts. On average 72% of transportation services were contracted out by Pennsylvania school districts in 2008, up from 62% in 1986.

In analyzing school district transportation costs, we control for the impact on costs of school district enrollment, fuel costs, spending for transportation of special education students, and the wealth and income of the school district. We find that:

- Contracting out significantly increases total costs. For example, if the "typical" district (with enrollment and other variables equal to the average for all districts) shifts from contracting out none of its transportation services to contracting out for all of its services, costs increase an estimated $223,861 (in 2008 dollars).

- Contracting out also increases costs to the state, in part because the state reimburses contracted transportation services at a higher rate than district self-provided services. In the typical district, increasing contracting out from zero to 100% increases costs to the state by $231,903.

- For local school districts, there is no statistically significant difference (at the 5% level) between what they pay for transportation services when they contract out versus when they self-provide transportation—in effect, the more generous state reimbursement of contracting out compensates for the increase in total costs.

In addition to the state's more generous reimbursement for contracted transportation services, decisions to contract out are also driven in some cases by the lump sum that districts receive up front for selling their bus fleet. Contractors also reportedly "low ball" their prices when bidding for new contracts—i.e., promise lower costs than actually result. Analysis of a sub-sample of 29 districts that privatized transportation services between 1992 and 2001 reveals that these districts experienced a 26% increase in total transportation costs in the five years after contracting out compared to a 6% increase in the five years before contracting out. Most of the jump in costs took place in the first year after privatization. Despite higher costs, districts may not revert to self-provided services because the state's more generous reimbursement of contractor services absorbs the increase. In addition, once districts sell their bus fleet, reverting back to self-provided services is impeded by the up-front cost of repurchasing a fleet. Lastly, school officials may be reluctant to publicize the increase in costs due to privatization.

Contracting out substantially increases state spending on transportation services. We estimate that if all districts switched to the self-supply of transportation services, total spending on student transportation services would fall by $78.3 million dollars with all of the cost savings accruing to the state.

Why does contracting out cost more than self-providing transportation services? While this requires further study, the general answer is that private contractors do not provide efficiencies sufficient to compensate for increases in costs associated with contracting out. These increases include contractor profits, the higher salaries of private contractors at the managerial and executive level, and the cost to school districts of monitoring contractors. Contracting can also be expensive because of lack of competition within the private industry in some areas. In addition, once a contract is in place, switching contractors or in-sourcing services may be disruptive,

create managerial headaches, or impose financial transition costs. These transition costs give current contractors leverage when charging for unanticipated additional services or bargaining over contract renewal terms. These reasons that privatization costs more than self-providing services are not unique to the school bus transportation industry but arise with a wide range of privatized services.

A quote in response to a Joint State Government Commission survey provides an illustration of how private contracting can raise costs (the full quote is in the conclusion to this report):[1]

> "...we purchased 3 mini-buses (1 with a wheelchair lift) and 4 minivans. Before...we were contracting 21 minivans that were transporting the same amount of students. We have saved over $200,000 per year in expenses by running a more efficient bus fleet.... [We] believe we can add to savings in areas such as extra-curricular transportation and field trip transportation. "

At a time when the state is scouring the entire budget for cost savings, in-sourcing school transportation services represents a significant saving opportunity. To move in this direction, the state should lower the subsidy for contracted services to the subsidy for self-provided transportation services. Savings could be used to reverse some of the recent cuts to the state's basic education subsidy. The state should also provide technical assistance to districts to re-evaluate their transportation services, and low-interest loans to assist with the purchase of new school buses. The Pennsylvania Association of School Board Officials (PASBO) could provide the technical assistance, supporting contracting in when it would lead to large savings, promoting the spread of best transportation practices when districts self-provide, and providing districts that continue to contract out with the expertise to bargain better contract terms. Through PASBO or a stand-alone entity, the commonwealth could also create its own non-profit transportation services provider that submits bids in response to district requests for proposals. This innovative option would directly address the lack of competition in the industry and also overcome the challenge with purchasing new buses, since the commonwealth bus company would have its own buses.

Introduction

As a result of growing student populations and increasing reliance on outside contractors, the U.S. student transportation industry has grown significantly in the past several decades. Today, an estimated 475,000 school buses transport roughly 25 million students to and from school, to extracurricular activities and on field trips. The school bus transportation industry includes 4,000 private companies and spans large, nation-wide corporations to small, locally-owned "mom and pops." The largest companies include First Student, Student Transportation of America, and Durham-Stock. Overall, about 40 percent of pupil transportation services in the United States are contracted out.

This study of school transportation services was undertaken in the context of an extremely difficult state budget situation. It was also undertaken to evaluate the distorting impacts of a flawed formula that reimburses districts more generously for contracted than for self-provided services (see Box 1).

Our primary methodology was statistical analysis of the cost of transportation services using a data set compiled largely from Pennsylvania Department of Education data. In addition, we undertook a brief review of the literature on the cost of school transportation services and conducted telephone interviews with school district officials knowledgeable about transportation services.

1 Joint State Government Commission, *High-Performing and Low-Spending School Districts: Best Practices and Other Factors*, Harrisburg, PA, December 2010

Box 1. The School Transportation Subsidy Formula

The current subsidy formula for Pennsylvania School District transportation services was written into the Pennsylvania School Code around 1970.[1] The formula includes four components, two of which are identical whether a district contracts out or not and two of which are more generous for districts that contract out than for districts that self-provide services. The rationale for reimbursing more generously for districts that contract out may have been that the state knew contracting out cost more when it first established the formula, but did not want to impose higher local transportation costs on districts that already contracted out. (If the state was previously bearing the burden of higher contractor costs, the state formula "held harmless" those districts with higher costs.) Over the longer term, a transportation subsidy that favors contracting out has led to more contracting out, increasing state costs.

The two subsidy formula components that are identical whether districts contract out or not are a per bus "base rate" that currently equals about $2,800 for a bus that carries more than 10 students; and a per-mile amount based on the total miles the bus drives each year along its assigned routes. The two components that are more generous when districts contract out are an additional per-bus amount that is based on the age of the bus; and a per mile amount that is multiplied by the maximum number of students that ride in the bus at any point in its routes—an incentive for planning routes that keep buses full.

To gauge the importance of the different formula components and to estimate how much more generously districts are reimbursed when they contract out, we asked a Pennsylvania school district (which happens to contract out) to run the subsidy numbers both ways—i.e., to provide its actual numbers (when it contracts out) and to compute what it would have received if it had self-provided.

In this district, the two formula components that are the same for districts that contract out and those that self-provide accounted for a bit less than half of the total state subsidy amount. The per-mile amount is more important than the "base rate," the former accounting for a bit more than a third of the total subsidy. The two components that are higher when districts contract out account for a bit more than half of total subsidy, especially when districts contract out (56%). Both formula components that are more generous to contracting districts provide 16.67% (one sixth) more to contracting districts. Overall, in this district, contracting out led to a 9% higher subsidy than self-providing using the state subsidy formula—$711,000 versus $655,000.[2] (After the subsidy amount is computed, how much the district actually receives depends on its property wealth, measured using the school district market value aid ratio (see footnote 10).)

Nine percent is a conservative estimate of how much more generous state reimbursement is when districts contract out because the calculation holds constant the age of the buses. In practice, private contractors tend to operate newer buses and thus districts that contract out receive an additional increment in subsidy from the state.

1 The vehicle allowance formula worksheet is available online at http://goo.gl/8QIoG

2 The Pennsylvania Association of School Business Officials (PASBO) recently performed a similar comparison of state reimbursement with contracted services versus self-provided servces, in this case for a district that self-provides services but was considering contracting out. In its report for the Williamsport Area School District, PASBO predicted that as a result of outsourcing "reimbursement from the Commonwealth will increase $75,000 annually for contracted transportation services. The State's formula favors contracted student transportation services." Pennsylvania Association of School Business Officials, *Williamsport Area School District Transportation Outsourcing Review*, Harrisburg, PA, June 2008.

Literature Review

An Ohio study of privatization of public school transportation between 1994 and 1998 found that the median cost per mile and cost per pupil were significantly higher in districts that contracted out than in districts with in-house transportation systems.[2]

In 2003, case studies of three school districts in Oregon that privatized transportation services found that school bus fleets were sold for reduced prices and replaced at the school's expense through the inclusion of contractor capital costs in bid prices. Furthermore promised savings from privatization were initially overestimated by contractors and followed later by price increases. Finally, the quality of services decreased after privatization as did the quality of worker pension and health benefits and the level of employee morale.

To date there have been two studies of the effect of the use contracted carriers on transportation costs here in Pennsylvania.[3]

In 1988 a study by Pennsylvania State Education Association (PSEA) found that: (1) the total cost of transporting students is higher for taxpayers when school districts contract out their transportation services; (2) the cost to the state is higher when school districts contract out; and (3) the cost to local districts is higher if they do not contract out.[4]

In May 2008, the Pennsylvania Association of School Business Officials (PASBO) released the results of a survey of Pennsylvania school district business administrators on school transportation services.[5] Some 231 school districts, just under half of the Commonwealth's school districts, responded to the survey. The PASBO survey found levels of contracting out similar to our data set: 63% had fully contracted out student transportation services, 14% used no contracted carriers and 23% used a mix of contractors and their own fleet and personnel. Before controlling statistically for differences in school districts (e.g., enrollment), the PASBO study found that districts that did not use contracted carriers spent less of their total district budget on student transportation services and had a lower cost per student transported. In statistical analysis based on one year of data on 152 school districts, PASBO found no statistically significant relationship between total transportation costs and whether districts used contractors only, mixed operations, or no contracted carriers. This finding, however, may have been the result of having only a small data set. (In Appendix D, we replicate PASBO's statistical methodology, which is slightly different than ours, using our 23-year data set for all school districts and do find that contracting out increases total costs.)

2 Mark Cassell, *Taking Them for a Ride: An Assessment of the Privatization of School Transportation in Ohio's Public School Districts Department of Political Science*, Kent State University. Available online at http://www.afscme.org/news/publications/privatization/taking-them-for-a-ride-an-assessment-of-the-privatization-of-school-transportation-in-ohios-public-school-districts.

3 Gordon Lafer and Bob Bussel, *All Costs Considered: A NEW Analysis on the Contracting Out of School Support Services in Oregon*, Labor Education and Research Center, University of Oregon, February 2008. Available online at http://pages.uoregon.edu/lerc/public/pdfs/costsconsidered.pdf

4 William F. Hughes, Jr., Bruce P. Merenstein and Gerard L. Brandon, *Study of the Pupil Transportation Subsidy*, Pennsylvania State Education Association, Meeting of Task Force On State Board of Education Chapter 23 (Pupil Transportation) Regulations, Harrisburg, Pennsylvania, January 1988.

5 Pennsylvania Association of School Business Officials, *Student Transportation Benchmarking Survey*, May 2008.

Findings From Interviews With District Transportation Managers

To better understand how individual school districts understand and feel towards contracting out, phone interviews were conducted with managers of transportation services. Individuals interviewed were selected because their district experienced either very large increases or decreases in contracted out transportation services in the 1986-2008 time period.

According to those interviewed, when deciding whether to contract out transportation services, school districts solicit bids from one or more private companies. Companies submitting bids typically estimate that they can save districts money compared to prior district costs. In addition, the upfront money that comes from the sale of the district's bus fleet increases the incentive to contract out. Several interviewees said that the private companies' estimated savings come in part from cuts in wages and benefits of bus drivers.

Schools increasing contracted services. For those schools that had greatly increased their contracted services since 1986, the transportation coordinators mainly cited cost savings as their reason for switching to a private contractor. As noted, the sale of the bus fleet made privatization more enticing to some districts. Some managers also said that they privatized to avoid administrative responsibilities for transportation, adding that this is an area in which they do not have specialized knowledge. Some managers said that private companies provide special expertise, including in the transportation of special education students. Several noted that the state subsidy formula was a factor in their decision to contract out, although they generally maintained that it was not the primary reason.

Schools decreasing contracted services. Although the general trend is increasingly to privatize student transportation, some districts discovered that they prefer to manage their own transportation systems because they like having total control over this function. Several district managers mentioned the control over personnel, bus routes, and maintenance specifically. They said that outside companies could not run their transportation as well because they lack the inside knowledge of the needs of the district and therefore cannot customize services to district needs as well as can district staff.

Two transportation coordinators said that past studies warning that contracting initially looks cheaper but then rises in price made them wary of privatization. One of the coordinators interviewed had worked for a private bus company in the past and learned "how contractors can make the little costs add up."

When asked about the equity of the state transportation reimbursement, most schools that have kept their transportation mostly in-house were aware of the bias of the formula. They view this as unfair and yet choose to retain control of their own transportation for the reasons cited above.

Data Set on Student Transportation Spending by School District

School districts in Pennsylvania have reported to the Commonwealth of Pennsylvania since at least 1986 the amount of money they spend on student transportations services as well as the amount of that spending allocated to contracted carriers.[6] Over the whole period Pennsylvania school districts spent an average of 69% of their budget for student transportation services on contracted carriers (see Table 2). This figure was as low as 62% in 1986 and has gradually climbed to 72% in 2008.

6 The Pennsylvania Department of Education, in its transportation services data, defines contracted carriers as private and or public entities that contract with a school district to transport students from home and school to school school (and back). In our data set, Center Area (Administrative Unit 127041903) and Monaca (Administrative Unit 127045453) are treated as one school district, Central Valley (Administrative Unit 127042003).

Table 2.

The Changing Distribution of Spending by School Districts on Contracted Carriers, 1986 to 2008

Year	25th percentile	Mean	75th percentile
1986	9%	62%	94%
1987	9%	63%	95%
1988	10%	64%	95%
1989	11%	64%	95%
1990	20%	66%	95%
1991	20%	66%	95%
1992	19%	66%	95%
1993	21%	67%	95%
1994	36%	68%	95%
1995	44%	69%	95%
1996	49%	69%	96%
1997	54%	69%	96%
1998	59%	70%	96%
1999	64%	71%	96%
2000	66%	71%	96%
2001	66%	72%	96%
2002	65%	72%	96%
2003	67%	71%	95%
2004	63%	71%	96%
2005	65%	71%	96%
2006	64%	71%	96%
2007	65%	71%	96%
2008	66%	72%	96%
Total	46%	69%	95%

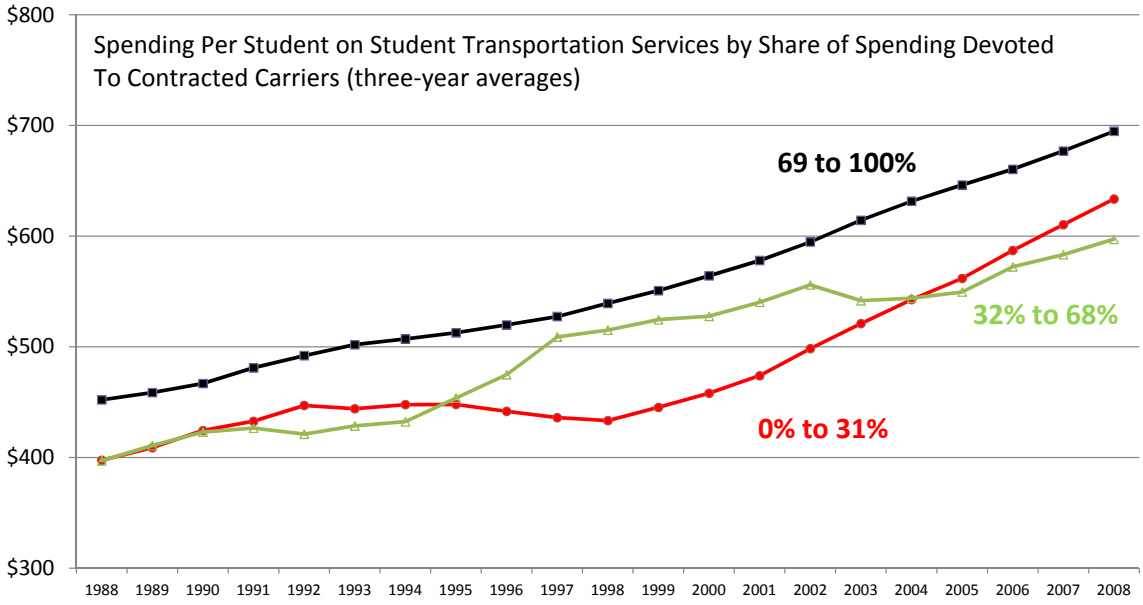
Note. The table refers to the mean (and 25th and 75th percentile) of the distribution of the share of total district transportation service spending on contracted carriers.

Source. Keystone Research Center (KRC) based on Pennsylvania Department of Education (PDE) data

Figure 1 shows spending in contracted carriers over time in three groups of districts: those spending 31% or less of their total budget for student transportation services on contracted carriers; those spending between 32% and 68% of their budget on contracted carriers; and those spending 69% or more.

Compared to the average for the entire sample, districts that spent the least (31% or less) on contracted carriers had per student transportation costs that were 10% lower (over the entire 23-year period). Districts that spent between 32% and 68% of their budget on contracted carriers had per student costs that were 7% higher than average. Districts that spent the most on contracted carriers (69% or more of their budget) had per student costs that were 4% higher than average.

Figure 1. Between 1986 and 2008 Districts That Relied the Most on Private Contractors Also Spent the Most Per Student for Student Transportation Services



Note. Figures are three-year averages so 1988 is an average of transportation spending per pupil in 1986, 1987 and 1988.

Source. KRC based on PDE data

Statistical Methodology

In our statistical analysis, we are interested in understanding the impact of the use of contracted carriers on total transportation spending, local spending, and state spending. This impact is measured by estimating the impact on costs of the extent to which the district contracts out, measured by the percent of total spending on transportation paid to contracted carriers. We adjust spending on student transportation services for inflation using a consumer price index published by the U.S. government.[7]

We also include in our statistical analysis a number of other variables that could impact transportation costs. "Controlling for" these other variables helps ensure that we do not attribute to contracting out impacts on costs that really result from other variables.

We include a control for school enrollment. We expect that the more students a district has the more it will spend on student transportation services.[8] (Ideally, we would have a variable for number of students transported. Since we don't have this variable over the entire period, school enrollment can be thought of as a proxy for number of students transported. Results using number of students transported (a variable available for four years) are reported in Appendix B.)

7 The precise inflation index used is the Consumer Price Index – Research Series. All dollar figures in this paper are in 2008 dollars.
8 In Appendix B we explore the impact of substituting students transported for school enrollment in our model.

Based on interviews with transportation managers and the Pennsylvania Association of School Business Officials (PASBO), we included a variable equal to the percent of transportation costs spent on transporting students to and from intermediate units. According to our interviewees, intermediate units often serve special education students, and the share of transportation costs spent on students going to intermediate units is thus a proxy for the cost of the transportation of special education students.[9] Our expectation is that the greater the district share of transportation spending devoted to transporting students to and from intermediate units the greater total spending on student transportation services will be.

We include a control for the percent of total expenditures represented by all other expenditures for transportation services not provided by school district employees or contracted carriers. This could include consultant costs. We don't have a clear prediction regarding the impact of these "other" costs on total expenditures.

To control for fuel costs we include the U.S. city average of the Consumer Price Index for motor fuels for all urban consumers. We expect that higher fuel costs raise total expenditures.

We include an index of the income and wealth of a school district called the aid ratio.[10] Because enrollment is used in the construction of the aid ratio and our model already includes student enrollment, the aid ratio enters our model as three indicator variables.[11] Our expectation is that the more income and wealth a school district has, the greater will be its spending on student transportation and the lower will be state spending on student transportation in that district. We have no prediction about the effect of district affluence on total spending (the sum of state and district spending).

As discussed earlier, the Commonwealth of Pennsylvania provides a more generous transportation subsidy when a district uses a contracted carrier. Our expectation, therefore, is that the use of contracted carriers will reduce the school districts total spending on transportation services while increasing the state's total spending. Because rural school districts rely more heavily contracted carriers we conducted additional analysis on a rural only and urban only sample to be sure that differences in population density were not driving our results. (See Appendix A.)

Results: The Impact of Contracting Out on School Transportation Costs

The Impact of Contracting Out on Total Transportation Costs. The first column of Table 2 reports the results from our regression estimating the impact of each independent variable on total costs. The coefficient on the percent of transportation services contracted out is positive and significant (at the 1% level) indicating that the more a school district relied on contracted carriers the more it spends in total on student transportation services.[12]

9 Appendix C presents the results of adding an additional proxy for special education transportation costs: special education enrollment. Adding this variable does not materially alter our findings.

10 The primary use of the aid ratio is to determine the generosity of the state basic education subsidy to each school district. The official definition of the overall aid ratio (or AR) is (0.6 * MV AR)+(0.4 * PI AR) where Market Value (MV) refers to the market value of property in the school district and PI refers to the personal income in the district. For those who want the details, MV AR equals 1- 0.5*(School District Market Value / SD WADM) / (State Total Market Value / State Total WADM), where WADM is the Weighted Average Daily Membership (WADM) (loosely, the pupil enrollment) of the district. PI AR is defined as 1-0.5*(School District Personal Income / SD WADM) / (State Total Personal Income / State Total WADM). For a district right at the state average for property wealth and personal income per capita, the AR equals 0.5. For a district with no income or property wealth, the AR would be one. For affluent districts with more than twice the average property wealth and personal income per capita, the AR from the formula above can be less than zero; however, the state sets equal to zero all ARs of zero or less.

11 We define four indicator (0 or 1) variables according to whether school fall into the bottom, 2nd, 3rd or 4th quartile. The omitted category includes school districts in the 4th quartile of the aid ratio which would equate to the poorest school districts in the state.

12 Increasing the share of pupil transportation spending devoted to contracted carriers by 10 percentage points raises total spending by 2.03% all else held constant.

With regard to other variables, the impacts on total costs of school enrollment, fuel costs, and the percent of spending on transporting students to the intermediate unit (Percent IU) are all, as expected, positive and significant. The coefficient on the percent of total expenditures on student transportation services represented by all other expenditures for transportation services not provided by school district employees (Percent Other) is positive but not significant. Turning to the three Aid Ratio variables in Table 3 (Aid Ratio: bottom quartile, Aid Ratio: 2nd quartile, Aid Ratio: 3rd quartile), the coefficients shown are all relative to the poorest districts (i.e., those in the 4th or highest Aid Ratio quartile): i.e., these coefficients express total spending relative to the poorest districts. Total spending is slightly lower in districts in the third quartile of the aid ratio compared to the poorest districts. There is no measurable difference in spending in the other quartiles when compared to the poorest districts.

The Impact of Contracting Out on School District Transportation Costs. The second column of Table 2 presents the results of the panel regression on school district transportation costs (total spending on student transportation services minus the subsidy each district gets from the Commonwealth). The coefficient on the percent contracted out is not statistically significant at the 5% level: this means that, based on our data and statistical model, it cannot be ruled out with 95% confidence that there is no difference in school districts' costs when they contract out versus self-provide. At a less demanding 10% level, we do find that a school district which relies more heavily on contracted carriers spends less of its own resources on student transportation services.[13] In sum, the larger Commonwealth subsidy for the use of contracted carriers slightly overcompensates for the increase in costs associated with contracting out.

As expected, higher enrollment, higher fuel costs and greater spending on transportation for intermediate units increases total expenditures by school districts. The coefficient on each indicator variable for the aid ratio is positive and significant and each coefficient increases in size as we move from the poorer to wealthier school districts. Spending by the school district on student transportation services is greater the more wealth and income there is in a district.

The Impact of Contracting Out on State Transportation Costs. The third column of Table 2 presents the results for state spending on student transportation services. The coefficient on the percent contracted out is positive and significant (at the 1% level) indicating that as a school district relies more heavily on contracted carriers, the state spends more in that district on student transportation services.[14] Because the Commonwealth provides a larger subsidy for the use of contracted carriers, the state bears essentially the full burden of the higher costs of contracted carriers.

As expected higher enrollment and higher fuel costs increase state expenditures. The coefficient on Percent I.U., our proxy for special education transportation, is not significant. This indicates that there is no relationship between state spending on transportation services and the share of transportation spending a school district devotes to transporting students to intermediate units. The coefficients on the three aid ratio indicator variables are now negative and significant, with the coefficient increasing in size as the school district gets wealthier: as expected, the poorer a school district the more the Commonwealth spends on student transportation services.

13 Increasing the total share of pupil transportation spending devoted to contracted carriers by 10 percentage points lowers by a little less than 1% (.92%) the school districts own spending on pupil transportation.

14 Increasing the share of pupil transportation spending devoted to contracted carriers by 10 percentage points raises state spending by 4.03% all else held constant.

Table 3.

Results: The Impact of Contracting Out and Other Variables on Transportation Spending

	Dependent Variable = Natural Log of Student Transportation Spending		
Independent Variables	Total Student Transportation Spending	School District Student Transportation Spending	State Student Transportation Spending
	b/se	b/se	b/se
School Enrollment	0.805***	0.742***	0.898***
	(0.043)	(0.064)	(0.057)
Fuel Costs	0.002***	0.003***	0.002***
	(0.000)	(0.000)	(0.000)
Percent I.U.	0.469***	0.633***	-0.054
	(0.101)	(0.126)	(0.112)
Percent Other	0.024	-0.224***	0.211***
	(0.056)	(0.085)	(0.067)
Aidratio: bottom quartile	0.020	0.272***	-0.193***
	(0.029)	(0.043)	(0.038)
Aidratio: 2nd quartile	-0.034	0.134***	-0.153***
	(0.026)	(0.037)	(0.033)
Aidratio: 3rd quartile	-0.040**	0.085***	-0.109***
	(0.016)	(0.023)	(0.022)
Percent Contracted Out	0.203***	-0.092*	0.403***
	(0.036)	(0.055)	(0.041)
Constant	7.259***	6.785***	5.922***
	(0.337)	(0.496)	(0.439)
R-sqr-within	0.555	0.274	0.375
R-sqr-between	0.726	0.782	0.507
R-sqr-overall	0.706	0.723	0.497
N	11485	11446	11456

Notes. *, ** and *** indicate significance at the 10, 5 and 1 percent levels respectively. Standard error estimates are robust to distrubances being heteroscedastic. A sample of 500 school districts spanning 1986 to 2008 has 11,500 observations. Thus there were 15 observations with missing values for total spending in the regression listed in column 2, 54 missing values for school district spending in column 3 and 32 missing values for state spending in column 4.

Source. KRC based on PDE data

How Big Is the Impact of Contracted Services on Costs? Statistical significance is one way of assessing the impact of contracting out on school transportation costs. But what state lawmakers and school district officials want to know is "how big is the impact of contracting out on costs, in dollar terms?" The coefficients in the first column of Table 3 allow us to estimate the dollar impact on total costs. Using these coefficients, Table 4 presents the predicted differences in total spending in three scenarios: when a district spends no money on contracted carriers; a district spends 30% on contracted carriers; and when a district spends 100% of budget for student transportation services on contracted carriers. In each scenario we assume the district in question is "typical" in all other respects except its level of contracting out (e.g., has average levels of school enrollment and fuel costs).[15] In addition, the district is evaluated relative to a school district in Pennsylvania that contracts out the average amount for all districts in our 1986 to 2008 sample—i.e., contracts out 68%.

The total transportation costs of a typical school district that devotes roughly 30% of its spending to contracted carriers will be $83,000 or 7.3% less than the same school district if it contracts out 68%. A typical district that does not use contracted carriers will have total transportation costs of $148,000 or 13.0% less on student transportation services than a district that contracts out 68%.

15 The prediction assumes the school district is in the 3rd quartile of the aid ratio.

A typical district that moves from self-providing transportation services to contracting out all of its services would raise total transportation costs by $223,861.[16] We estimate this change would increase costs to the state by $231,904.[17] On average contracting out all transportation services would reduce school district spending (total minus state) by $40,802. However, as noted, the coefficient on contracting out for school district spending in Table 3 is estimated only imprecisely and not significant at the 5% level. Thus we can only say with 95% confidence that the change in school district spending when it switches from self-providing to contracting out would range between an $84,290 savings and a $7,658 cost increase. The weakness and uncertainty in the relationship between contracting out and cost savings for a school district suggests that in some instances contracting out fails to save school districts money.[18]

For the Commonwealth as a whole, the savings from all districts reverting to 100% self-providing from the current situation (an average of 72% contracting out in 2008) would be $78.3 million. All of the savings would accrue to the state. For districts, of course, making the switch from contracting out to self-providing services has significant transition costs, including for the purchase of a bus fleet. To reap long-term savings from more efficient district self-provision, the state will have to address the up-front and transition costs.

Table 4.

Predicted Differences in Total Transportation Spending Based on The District Contracted Carrier Share

Share of Student Transportation Spending Devoted To Contracted Carriers	Difference in Student Transportation Spending Compared to Contracting the Average Amount (i.e. 68%)	
	Difference	Log Difference
0%	-$148,480	-13.0%
30%	-$83,000	-7.3%
68%	$0	0.0%
100%	$75,000	6.6%

Note. Predicted values hold constant school enrollment, fuel costs, percent intermediate units, percent other and the aid ratio.

Source. KRC based on PDE data

Results of Rural and Urban Analysis. As noted, Appendix A presents the findings from an alternative statistical approach that separates "rural" from "urban" districts (using the Center for Rural Pennsylvania's definition of rural). Rural districts rely on contracted carriers for 82% of transportation services in our data set compared to 55% for urban districts.

The qualitative results of our analysis are similar for rural and urban districts separately as they are for all districts analyzed as a group: contracting out increases both total costs and costs to the state significantly. Contracting out also lowers rural districts costs significantly but does not have a significant impact on urban district costs.

16 The upper and lower bound of a 95% confidence interval yield estimated cost increase of between $139,640 and $314,341.
17 The upper and lower bound of a 95% confidence interval yield estimated costs increase for the state of between $177,509 and $290,882.
18 The next section of the paper which examines the change in total spending in 29 districts that moved from largely self-providing services to contracting out finds no evidence that school district costs went down as a result of privatization in those 29 districts.
See also Appendix E.

Turning to the size of the impact on costs, while rural districts rely more on contracted carriers, contracting out leads to bigger percentage impacts on costs. For example, shifting from entirely contracting out to entirely self-providing services would lower costs for a typical rural district by 29%--or $267,050. The same shift would only decrease total costs for an urban district 14%.

Possible reasons for contracting out being relatively more expensive in rural districts than urban include a lack of expertise within small rural districts in picking contractors and a lack of private-sector competition.

Low-Balling: Costs Increase Sharply in Most Districts After Privatization

In late 2009 the Central Dauphin School District chose to outsource most of its student transportation services to a private bus company. The district projected the move would save $773,000 per year but projected savings never materialized, with some estimates suggesting spending rose by more than $300,000. The district blamed some of the cost overruns on rapidly rising fuel prices.[19]

Analysis of a subset of school districts that privatized school transportation services within our period of study, however, indicate that Central Dauphin's experience is typical: spending on student transportation services increases more often than it decreases following privatization (i.e., defined as a shift from mostly self-providing services to mostly contracting for services). This increase is consistent with the finding from our entire sample that contracting out is more expensive.

Between 1992 and 2001, we identified 29 school districts that substantially increased their use of contracted carriers. (Table E1 of Appendix E lists each school district and the first year in which they increased their use of contracted carriers substantially.) Limiting our sample of districts to those that privatized between 1992 and 2001 allows us to examine the change in total spending five years before and five years after a privatization. In Table 5 below we sum inflation-adjusted transportation spending across these 29 districts and find that total spending (i.e., the sum of local plus state spending) increased by 6% prior to a privatization. In these same districts five years after privatization, total spending increased by 26%; the local contribution rose 14% and the state contribution rose 40% after privatization occurred. (Table 6 lists the changes in spending in individual districts in the five years before and after privatization; in 22 districts, spending increased more in the five years after privatization than the five before.)[20]

Table 6 presents the median annual change in total, local and state spending on student transportation in each year for which we have data for all 29 school districts prior to and after a privatization. Of note here is the 17.3% median increase in total spending in the first year after a privatization. In the first year after a privatization in 20 out of the 29 school districts (68%) spending increased by 10% or more.

19 Mary Klaus, "Bus Outsourcing, Hiring From 2009 Haunt Central Dauphin School Board", *The Patriot-News*, August 22, 2011: available online at http://www.pennlive.com/midstate/index.ssf/2011/08/bus_outsourcing_hiring_from_20.html

20 Regression analysis reviewed in Appendix E indicates that controlling for enrollment, fuel costs and other factors, total spending was 13% higher in these 29 districts after privatization.

Table 5.

Change in Spending (inflation-adjusted) on Student Transportation in the Five Years Before and After Privatization of Student Transportation in 29 School Districts

Year		Total Student Transportation Spending (State and Local Contribution)	School District Contribution	State Contribution
Year -5		$37,267,863	$20,672,225	$16,595,637
Year 0		$39,494,127	$20,565,848	$18,928,278
Year 5		$49,863,912	$23,356,594	$26,507,316
Before Privatization	Change	$2,226,264	-$106,377	$2,332,642
	Percent Change	6%	-1%	14%
After Privatization	Change	$10,369,785	$2,790,746	$7,579,038
	Percent Change	26%	14%	40%

Source. Keystone Research Center based on Pennsylvania Department of Education data

Table 6.

Median Annual Percent Change in Total Student Transportation Spending Before and After Privatization of Student Transportation Services in 29 Pennsylvania School Districts

Before/After	Year	Total	Local	State
Before	Year -4	2.5%	2.8%	0.0%
Before	Year -3	3.4%	5.5%	2.5%
Before	Year -2	0.3%	-2.9%	1.4%
Before	Year -1	3.5%	2.7%	-1.9%
Before	Year 0	0.8%	-4.7%	6.4%
After	Year 1	17.3%	31.9%	2.4%
After	Year 2	-1.6%	-14.1%	18.3%
After	Year 3	5.0%	4.1%	6.6%
After	Year 4	1.7%	0.9%	4.0%
After	Year 5	1.7%	-2.2%	0.7%
After	Year 6	2.5%	2.3%	2.5%
After	Year 7	4.1%	1.9%	1.9%
After	Year 8	2.7%	3.3%	-0.7%
Average Before		2.1%	0.7%	1.7%
Average After		4.2%	3.5%	4.5%

Source. Keystone Research Center analysis of Pennsylvania Department of Education data

Districts contract out despite the increase in costs for a number of reasons. Critically, the state's more generous reimbursement of contractor services currently absorbs the increase and can even lead to savings for districts. In addition, districts may receive a lump sum up-front payment for selling their bus fleets. Third, contractors may promise lower costs than actually result—a phenomenon referred to as "low balling" in the industry. One way low balling occurs is through an initial contract that saves districts money followed by the negotiation of additional charges for additional services not fully anticipated in the initial contract (e.g., transportation to playoff games for sports teams or special field trips). Districts may not revert to self-provided services when prices increase because of the up-front cost of repurchasing a bus fleet or the public embarrassment of vetting a failed and costly privatization with the School Board and local community.

Table 7.

Change in Total Spending (inflation-adjusted) on Student Transportation in the Five years Before and After Privatization of Student Transportation in 29 School Districts

School District	Before		After	
	Change	Percent Change	Change	Percent Change
Annville-Cleona SD	-$135,614	-25%	$108,213	20%
Boyertown Area SD	$310,944	12%	$954,925	36%
Bristol Twp SD	$308,915	7%	$1,287,099	30%
Cameron Co SD	-$23,195	-7%	$101,101	30%
Central York SD	$257,937	18%	$335,589	24%
Cocalico SD	$35,874	3%	$479,399	46%
Conestoga Valley SD	-$49,098	-4%	$321,507	29%
Cornwall-Lebanon SD	$613,268	34%	$10,402	1%
Cranberry Area SD	$15,774	2%	$253,226	27%
Dallastown Area SD	$121,418	8%	$969,526	66%
East Allegheny SD	$38,238	3%	$415,563	36%
Eastern Lancaster Co SD	-$222,528	-17%	$898,696	68%
Eastern Lebanon Co SD	$51,720	7%	$383,760	48%
Eastern York SD	$109,476	10%	$171,033	16%
Governor Mifflin SD	$487,087	27%	-$146,020	-8%
Harrisburg City SD	-$870,627	-36%	$1,697,154	71%
Manheim Twp SD	-$113,780	-9%	$820,225	66%
Mount Carmel Area SD	-$86,575	-30%	$218,533	76%
Palisades SD	-$300,345	-21%	$475,849	33%
Panther Valley SD	$103,761	16%	$198,426	30%
Perkiomen Valley SD	$497,245	20%	$446,128	18%
Purchase Line SD	$23,926	3%	$557,455	81%
Reading SD*	$355,278	18%	-$28,665	-1%
Sharon City SD	-$37,094	-31%	$85,489	71%
Shikellamy SD	-$39,474	-5%	$192,564	22%
Southeast Delco SD*	$132,827	6%	-$404,560	-18%
Tamaqua Area SD	$470,367	24%	-$641,834	-32%
Williamsburg Comm SD	$15,953	10%	$202,530	128%
Yough SD	$154,582	12%	$6,470	1%
Total	**$2,226,264**	**6%**	**$10,369,785**	**26%**

Note. *Both Reading SD and Southeast Delco SD would eventually significantly reduce their use of contracted carriers, Reading SD in 2007 and Southeast Delco in 2003. The changes reported above cover 1987 to 1997 for Reading SD and 1986 to 1996 for Southeast Delco SD.

Source. Keystone Research Center based on Department of Education data

Conclusion

The use of contracted carriers by Pennsylvania school districts increases total spending on student transportation services in the Commonwealth. Private contractors do not provide efficiencies sufficient to compensate for the increases in costs associated with contracting out. These increases include contractor profits, the higher salaries of private contractors at the managerial and executive level, and the cost to school districts of monitoring contractors' costs. Contracting can also be expensive because of lack of competition within the private industry in some areas. In addition, once a contractor is in place, switching contractors or contracting in may be disruptive, creating managerial headaches, or financial transition costs, such as the cost of purchasing a fleet of buses when a district reverts to self-providing services. Transition costs give the current contractor market leverage, allowing them to charge higher prices for unanticipated additional services.

A recent Joint State Government Commission report contains a case example of the potential to save significant money by bringing contracted transportation services back into the district.

> "…for the school year September 2007, we purchased 3 mini-buses (1 with a wheelchair lift) and 4 minivans. Before we took on this initiative, we were contracting 21 minivans that were transporting the same amount of students. We have saved over $200,000 per year in expenses by running a more efficient bus fleet for these isolated areas. We are continuing to isolate areas of transportation where we can "chip away". We…believe we can add to savings in areas such as extra-curricular transportation and field trip transportation. Additionally, we have taken complete responsibility for Intermediate Unit & Early Intervention transportation and, again, believe we have successfully achieved better efficiency."[21]

Statewide, insourcing school transportation services represents a significant saving opportunity. Savings could be used to reverse some of the recent cuts to the state's basic education subsidy. To achieve more savings from contracting in, the state should start by eliminating the distortion in district decision-making that results from the higher subsidy for contracted services. The state could also partner with the Pennsylvania Association of School Board Officials (PASBO) to provide technical assistance on transportation services to school districts. Such technical assistance could encourage contracting in when it would lead to large savings, promote the spread of best transportation practices among districts that self-provide services, and provide districts that continue to contract out with the expertise needed to bargain better contract terms. Through PASBO or a stand-alone entity, the commonwealth could also create its own non-profit transportation services provider that submits bids in response to district requests for proposals. This innovative option would directly address the lack of competition in the industry and also overcome the challenge with purchasing new buses, since the commonwealth bus company would have its own buses.

21 Joint State Government Commission, *High-Performing and Low-Spending School Districts: Best Practices and Other Factors*, Harrisburg, PA, December 2010

Appendix A: Rural and Urban

In this appendix we estimate separately for urban and rural school districts the impact of the use of contracted carriers on total transportation spending.

As illustrated in Table A1 between 1986 and 2008 rural school districts rely more heavily upon contracted carriers than urban school districts devoting on average of 82% of their transportation spending to contracted carriers compared to just 55% for urban school districts.[22]

Based on the coefficients in Table A3 we find that rural school districts that do not use contracted carriers spend 21.2% less than the average rural school district (Table A4).

An urban school district that does not used contracted carriers spends 7.7% less on student transportation than the average urban school district (Table A6).

Table A1.

The Share of Total Spending on Student Transportation Devoted to Purchasing Services From Contracted Carriers 1986 to 2008

Year	Urban			Rural		
	25th percentile	Mean	75th percentile	25th percentile	Mean	75th percentile
1986	1%	47%	86%	79.2%	77.6%	97.2%
1987	1%	49%	88%	79.4%	78.6%	96.8%
1988	1%	49%	89%	82.7%	79.5%	96.8%
1989	1%	49%	91%	80.1%	79.1%	96.6%
1990	1%	52%	92%	84.0%	81.4%	97.2%
1991	2%	52%	92%	83.0%	81.2%	96.8%
1992	2%	52%	92%	82.2%	81.3%	96.7%
1993	2%	54%	92%	82.3%	80.4%	96.6%
1994	3%	54%	92%	83.7%	82.3%	96.5%
1995	3%	55%	92%	83.3%	82.4%	96.8%
1996	3%	56%	93%	83.8%	82.7%	97.2%
1997	4%	57%	92%	83.0%	82.6%	97.5%
1998	6%	59%	93%	85.0%	82.7%	97.7%
1999	6%	59%	92%	84.7%	83.3%	97.4%
2000	6%	59%	93%	85.0%	84.0%	97.8%
2001	10%	60%	93%	85.4%	84.4%	97.9%
2002	11%	60%	92%	86.0%	84.7%	97.7%
2003	9%	59%	91%	83.7%	84.2%	97.6%
2004	10%	58%	90%	83.9%	83.8%	98.1%
2005	10%	59%	91%	82.3%	83.9%	97.6%
2006	10%	58%	91%	82.2%	83.8%	97.8%
2007	11%	59%	92%	82.6%	84.1%	98.0%
2008	13%	60%	92%	82.5%	84.2%	97.6%
Total	3%	55%	92%	83.4%	82.3%	97.2%

Source. Keystone Research Center (KRC) based on Pennsylvania Department of Education (PDF) data

22 Our definition of urban and rural is based upon a classification developed by the Center for Rural Pennsylvania (CRP). According to CRP a school district is rural when the number of persons per square mile within a school district is less than 284. http://www.rural.palegislature.us/rural_urban.html

Table A2.

Enrollment and Spending on Student Transportation in Urban and Rural School Districts in Pennsylvania

Enrollment in 2008						
	10th Percentile	25th Percentile	Median	Mean	75th Percentile	90th Percentile
Urban	1,295	1,932	3,450	5,045	5,381	8,135
Rural	790	1,118	1,724	2,076	2,530	3,560
Average	924	1,358	2,315	3,602	3,945	6,259
Total spending on student transportation in 2008						
	10th Percentile	25th Percentile	Median	Mean	75th Percentile	90th Percentile
Urban	$543,332	$1,149,000	$2,012,000	$3,114,000	$3,446,000	$5,709,000
Rural	$517,363	$788,495	$1,250,000	$1,550,000	$1,797,000	$2,842,000
Average	$527,785	$902,924	$1,530,000	$2,352,000	$2,654,000	$4,782,000

Source. KRC analysis of PDE data

Table A3.

Rural School Districts

Dependent Variable = Natural Log of Student Transportation Spending	Total Student Transportation Spending	School District Student Transportation Spending	State Student Transportation Spending
	b/se	b/se	b/se
School Enrollment	0.694***	0.540***	0.859***
	(0.078)	(0.098)	(0.107)
Fuel Costs	0.002***	0.003***	0.002***
	(0.000)	(0.000)	(0.000)
Percent I.U.	0.271**	0.292	0.140
	(0.121)	(0.234)	(0.138)
Percent Other	0.168**	-0.329**	0.435***
	(0.085)	(0.136)	(0.090)
Aid ratio: bottom quartile	0.069**	0.276***	-0.049
	(0.031)	(0.054)	(0.037)
Aid ratio: 2nd quartile	0.039*	0.151***	-0.011
	(0.020)	(0.043)	(0.023)
Aid ratio: 3rd quartile	-0.000	0.106***	-0.035**
	(0.013)	(0.027)	(0.016)
Percent Contracted Out	0.290***	-0.246**	0.545***
	(0.074)	(0.116)	(0.083)
Constant	8.082***	8.245***	6.305***
	(0.595)	(0.751)	(0.809)
R-sqr-within	0.471	0.166	0.334
R-sqr-between	0.797	0.770	0.703
R-sqr-overall	0.768	0.628	0.666
N	5589	5556	5577

Notes. *, ** and *** indicate significance at the 10, 5 and 1 percent levels respectively. Standard error estimates are robust disturbances being heteroscedastic.

Source. KRC based on PDE data.

Table A4.

Predicted Differences in Total Transportation Spending Based on The Percent of Student Transportation Devoted to the Use of Contracted Carriers in Rural School Districts

Share of Student Transportation Spending Devoted To Contracted Carriers	Difference in Student Transportation Spending Compared to the Average Rural District	
	Difference	Log Difference
0%	-$211,435	-21.2%
30%	-$137,124	-13.8%
82%	$0	0.0%
100%	$52,767	5.3%

Note. Predicted values hold constant school enrollment, fuel costs, percent intermediate units, percent other and the aid ratio.

Source. KRC based on PDE data

Table A5.

Urban School Districts

Dependent Variable = Natural Log of Student Transportation Spending	Total Student Transportation Spending	School District Student Transportation Spending	State Student Transportation Spending
	b/se	b/se	b/se
School Enrollment	0.870***	0.847***	0.987***
	(0.060)	(0.081)	(0.075)
Fuel Costs	0.002***	0.003***	0.002***
	(0.000)	(0.000)	(0.000)
Percent I.U.	0.513***	0.722***	-0.121
	(0.131)	(0.152)	(0.144)
Percent Other	-0.049	-0.194*	0.096
	(0.079)	(0.116)	(0.106)
Aid ratio: bottom quartile	-0.060	0.245***	-0.391***
	(0.049)	(0.068)	(0.061)
Aid ratio: 2nd quartile	-0.122**	0.105*	-0.354***
	(0.047)	(0.064)	(0.058)
Aid ratio: 3rd quartile	-0.105***	0.043	-0.238***
	(0.034)	(0.042)	(0.044)
Percent Contracted Out	0.144***	-0.034	0.333***
	(0.037)	(0.061)	(0.042)
Constant	6.772***	6.122***	5.162***
	(0.481)	(0.653)	(0.601)
R-sqr-within	0.608	0.412	0.417
R-sqr-between	0.696	0.709	0.583
R-sqr-overall	0.679	0.678	0.571
N	5896	5890	5879

Notes. *, ** and *** indicate significance at the 10, 5 and 1 percent levels respectively. Standard error estimates are robust to disturbances being heteroscedastic.

Source. KRC based on PDE data.

Table A6.

Predicted Differences in Total Transportation Spending Based on The Percent of Student Transportation Devoted to the Use of Contracted Carriers in Urban School Districts

Share of Student Transportation Spending Devoted To Contracted Carriers	Difference in Student Transportation Spending Compared to the Average Urban District	
	Difference	Log Difference
0%	-$101,000	-7.7%
30%	-$45,000	-3.4%
55%	$0	0.0%
100%	$87,000	6.6%

Note. Predicted values hold constant school enrollment, fuel costs, percent intermediate units, percent other and the aid ratio.

Source. KRC based on PDE data

Appendix B: Results with Enrollment and Students Transported 2004 to 2008

Because we only have data on the number of students transported since 2004 we rely instead on school enrollment for our analysis of student transportation expenditures from 1986 to 2008. Table B1 presents the coefficients of our model over the period from 2004 to 2008. In column 1 is our model with school enrollment and in column 2 our model using students transported. Substituting students transported for school enrollment does not change the results. The coefficient of interest, Percent Contracted Out is not statistically significant in either model a result driven by the shortened period of analysis. As illustrated in Appendix C expanding the time period to cover the period from 2001 to 2008 returns a significant and positive coefficient on Percent Contracted Out.

Table B1. Results with Enrollment and Students Transported 2004 to 2008

Dependent Variable = Natural Log of Student Transportation Spending	Total Student Transportation Spending	Total Student Transportation Spending
	b/se	b/se
School Enrollment	0.597***	
	(0.085)	
Students Transported		0.179***
		(0.050)
Fuel Costs	0.001***	0.001***
	(0.000)	(0.000)
Percent I.U.	0.756***	0.764***
	(0.187)	(0.180)
Percent Other	0.116	0.111
	(0.118)	(0.117)
Aid ratio: bottom quartile	-0.009	-0.034
	(0.026)	(0.026)
Aid ratio: 2nd quartile	-0.010	-0.023
	(0.017)	(0.018)
Aid ratio: 3rd quartile	-0.013	-0.019
	(0.011)	(0.013)
Percent Contracted Out	0.086	0.075
	(0.099)	(0.096)
Constant	9.243***	12.567***
	(0.680)	(0.394)
R-sqr-within	0.250	0.231
R-sqr-between	0.687	0.707
R-sqr-overall	0.682	0.680
N	2495	2485

Notes. *, ** and *** indicate significance at the 10, 5 and 1 percent levels respectively. Standard error estimates are robust to disturbances being heteroscedastic.

Source. KRC based on PDE data.

Appendix C: Results with Special Education Enrollment 2001 to 2008

The transportation of special education students to and from school often requires specialized equipment and training. As a result the transportation of special education students is by some estimates 6 to 10 times more expensive than the typical cost of student transportation services.[23] According to analysis by the Pennsylvania Association of School Officials (PASBO) school districts use a combination of their own buses, buses provided by intermediate units and buses provided by contracted carriers to transport special education students.[24] Although our analysis includes a control for school district expenditures for transportation services provided by intermediate units we did not have a separate control in our full model for special education enrollment because we only have this data since 2001. If school districts disproportionately rely upon contracted carriers to transport special education students our estimates of the increased expenditure that results from the use of contracted carriers may be overstated.[25]

Table C1 presents the coefficients from our original model for the full period from 1986 to 2008 (column 1), the same model for the period from 2001 to 2008 (column 2) and finally for the period 2001 to 2008 with an additional control for special education enrollment. The coefficient on Percent Contracted Out is essentially unchanged after including an additional control for special education enrollment. Our finding in the main body of this paper that the use of contracted carriers raises spending on transportation services does not appear to be driven by unobserved differences in the use of contracted carriers by school districts to transport special education students.

23 Tim Ammon of Management Services Partnership, Inc. http://www.managementpartnershipservices.com/staff.asp

24 Pennsylvania Association of School Business Officials, Student Transportation Benchmarking Survey, May 2008. Page 16.

25 It is not possible in our data to determine whether districts are indeed using contracted carriers primarily to transport special education students.

Table C1.

Results with Special Education Enrollment 2001 to 2008

Dependent Variable = Natural Log of Student Transportation Spending	1986 to 2008	2001 to 2008	2001 to 2008 with Special Education Enrollment
	b/se	b/se	b/se
School Enrollment	0.805***	0.719***	0.645***
	(0.043)	(0.063)	(0.066)
Fuel Costs	0.002***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)
Percent I.U.	0.469***	0.581***	0.535***
	(0.101)	(0.161)	(0.160)
Percent Other	0.024	0.204*	0.195*
	(0.056)	(0.105)	(0.104)
Aid ratio: bottom quartile	0.020	0.001	-0.003
	(0.029)	(0.024)	(0.024)
Aid ratio: 2nd quartile	-0.034	-0.009	-0.014
	(0.026)	(0.018)	(0.018)
Aid ratio: 3rd quartile	-0.040**	0.003	-0.001
	(0.016)	(0.013)	(0.013)
Percent Contracted Out	0.203***	0.184**	0.179**
	(0.036)	(0.072)	(0.073)
Special Education Enrollment			0.086***
			(0.012)
Constant	7.259***	8.198***	8.281***
	(0.337)	(0.500)	(0.502)
R-sqr-within	0.555	0.350	0.362
R-sqr-between	0.726	0.717	0.723
R-sqr-overall	0.706	0.711	0.717
N	11485	3992	3984

Notes. *, ** and *** indicate significance at the 10, 5 and 1 percent levels respectively. Standard error estimates are robust to disturbances being heteroscedastic.

Source. KRC analysis of PDE data

Appendix D: PASBO Student Transportation Benchmarking Survey

As in our own analysis the Pennsylvania Association of School Business Officials (PASBO) Student Transportation Benchmarking Survey found that school districts that relied exclusively on contracted carriers had higher costs than districts that did not (Table D1).

Table D1.

Cost Per Student Transported by Extent of Contracting

Operational Type	Count	Median	Average
Fully Contracted	137	$619	$667
Mixed	49	$588	$617
Fully District Owned	31	$598	$616

Source. Pennsylvania Association of School Business Officials, Student Transportation Benchmarking Survey, May 2008.

However PASBO's statistical analysis based on data collected from a smaller subset of 152 school districts or roughly 30% of the commonwealths school districts, found no statistically significant relationship between total transportation costs and whether districts used only contracted carriers, a mix of their own school personnel and busses and contracted carriers or used no contracted carriers at all. As these results differ substantially from our analysis we requested from PASBO information about the school districts used in their analysis. Concerns over confidentiality prevented PASBO from providing any of the information we requested.

One important difference between the PASBO study and our analysis is the structure of the variable identifying the degree to which districts rely on contracted carriers. Our analysis uses a continuous variable that identifies the percentage of total spending on student transportation devoted to contracted carriers (Percent Contracted Out). The PASBO study classifies districts into three distinct categories Fully Contracted, Mixed and Fully District Owned. Under such a classification a district that devotes 10% of its expenditures on contracted carriers is assumed to be equivalent to a district that spends 90% of its expenditures on contracted carriers.

Table D2 uses our dataset from 1986 to 2008 and compares the coefficients on our continuous variable (Column 1) to those generated when using two binary variables similar to the PASBO controls which we have labeled All Contractor Buses and Mix of District and Contracted Buses (Column 2).[26]

26 Districts that use no contracted carriers are the reference group in Column 2 of Table D2 and thus the coefficients on All Contractor Buses and Mix of District and Contracted Buses should be interpreted as the level of expenditure relative to districts that do not use contracted carriers. In other words if the coefficient on All Contractor Buses is positive it means that contracted carriers raise the level of expenditures relative to districts that do not use contracted carriers. Similarly a positive coefficient on Mix of District and Contracted Buses means that districts that use a mix of contracted carriers and their own buses have higher expenditures than districts that do not use contracted carriers.

Table D2.

Panel Regression with Percent Contracted Out and PASBO Controls		
Dependent Variable = Natural Log of Student Transportation Spending	1986 to 2008	1986 to 2008 with PASBO Controls
	b/se	b/se
School Enrollment	0.805***	0.818***
	(0.043)	(0.043)
Fuel Costs	0.002***	0.002***
	(0.000)	(0.000)
Percent I.U.	0.469***	0.340***
	(0.101)	(0.100)
Percent Other	0.024	-0.162***
	(0.056)	(0.046)
Aid ratio: bottom quartile	0.020	0.025
	(0.029)	(0.029)
Aid ratio: 2nd quartile	-0.034	-0.031
	(0.026)	(0.026)
Aid ratio: 3rd quartile	-0.040**	-0.040**
	(0.016)	(0.016)
Percent Contracted Out	0.203***	
	(0.036)	
All Contractor Buses		0.074***
		(0.023)
Mix of District and Contracted Buses		0.020
		(0.016)
Constant	7.259***	7.277***
	(0.337)	(0.336)
R-sqr-within	0.555	0.546
R-sqr-between	0.726	0.724
R-sqr-overall	0.706	0.704
N	11485	11485

Notes. *, ** and *** indicate significance at the 10, 5 and 1 percent levels respectively. Standard error estimates are robust to disturbances being heteroscedastic. In Column 2 the reference group is defined as school districts that did not contract out.

Source. KRC analysis based on PDE data.

The coefficients on the PASBO variables are positive and significant indicating that districts that use contracted carriers have higher expenditures that those that don't and thus are broadly consistent with our findings using a continuous variable.

The most important limitation of the PASBO study is that it is based upon a single year of data for 152 school districts. Our analysis on the other hand relies upon 23 years of data and includes data on between 499 and 500 school districts. Although we don't have the data PASBO relied upon we can structure our analysis like PASBO's using similarly constructed controls and estimating the effect the use of contracted carriers using only one year of data.

Table D3 reports only the coefficients of interest for an ordinary least squares (OLS) regression estimated separately for each of the 23 years of data we have and using the two binary controls All Contractor Buses and Mix of District and Contracted Buses. The coefficient on All Contractor Buses was positive and significant in only five years. The coefficient on a Mix of District and Contracted Buses was positive and significant in nine years.

Table D3.

PASBO Controls by Year

Dependent Variable = Natural Log of Student Transportation Spending

Year	All Contractor Buses		Mix of District and Contracted Buses		R-sqr	N
	b	se	b	se		
1986	-0.053	(0.152)	0.016	(0.088)	0.788	500
1987	0.256	(0.183)	0.129*	(0.074)	0.796	499
1988	0.132	(0.184)	0.100	(0.068)	0.817	499
1989	0.212	(0.162)	0.130**	(0.063)	0.838	500
1990	-0.011	(0.239)	0.061	(0.069)	0.831	500
1991	0.591**	(0.258)	0.082	(0.076)	0.836	500
1992	0.374***	(0.123)	0.095	(0.083)	0.840	500
1993	0.676***	(0.183)	0.125	(0.094)	0.845	500
1994	0.540***	(0.086)	0.158**	(0.077)	0.834	500
1995	0.396**	(0.198)	0.186*	(0.095)	0.824	500
1996	0.128	(0.117)	0.146*	(0.077)	0.832	499
1997	0.115	(0.106)	0.168**	(0.079)	0.836	499
1998	-0.042	(0.104)	0.122	(0.080)	0.831	499
1999	-0.059	(0.119)	0.036	(0.072)	0.834	499
2000	0.094	(0.145)	0.218**	(0.106)	0.837	499
2001	-0.030	(0.103)	0.118	(0.080)	0.841	499
2002	-0.109	(0.154)	0.146**	(0.066)	0.835	499
2003	-0.102	(0.078)	0.094	(0.067)	0.836	499
2004	0.096	(0.080)	0.038	(0.070)	0.836	499
2005	-0.129	(0.149)	0.085	(0.064)	0.833	499
2006	-0.007	(0.110)	0.096	(0.070)	0.831	499
2007	0.100	(0.105)	0.128*	(0.075)	0.831	499
2008	-0.118	(0.116)	0.081	(0.063)	0.828	499

Notes. *, ** and *** indicate significance at the 10, 5 and 1 percent levels respectively. Standard error estimates are robust to disturbances being heteroscedastic. Other controls included: School Enrollment; Population Per Square Mile; Percent I.U.; Percent Other; and the Aid Ratio.

Source. KRC analysis based on PDE data

Table D4 reports again only the coefficients interest for 23 separate OLS regressions but in contrast to Table D3 uses our continuous control. Here Percent Contracted Out was positive and significant in 15 of the 23 years.

Our continuous variable Percent Contracted Out has more information and thus is more robust than the PASBO binary controls in capturing the effect of the use of contracted carriers on total expenditures.

Furthermore especially recently analysis based on single year of data fails to find a significant impact of the use of contracted carriers on expenditures. Analysis that tracks expenditures in school districts over time on the other hand does clearly demonstrate that the use of contracted carriers by Pennsylvania school districts is raising expenditures on school transportation above those by districts who rely less on contracted carriers.

Table D4.

Percent Contracted Out OLS Regression

Dependent Variable = Natural Log of Student Transportation Spending				
Year	Percent Contracted Out		R-sqr	N
	b	se		
1986	0.088*	(0.051)	0.790	500
1987	0.041	(0.049)	0.794	499
1988	0.096*	(0.049)	0.817	499
1989	0.075	(0.049)	0.837	500
1990	0.153***	(0.056)	0.834	500
1991	0.108*	(0.060)	0.833	500
1992	0.162***	(0.051)	0.843	500
1993	0.174***	(0.050)	0.847	500
1994	0.211***	(0.052)	0.839	500
1995	0.223***	(0.054)	0.828	500
1996	0.218***	(0.049)	0.838	499
1997	0.199***	(0.050)	0.840	499
1998	0.189***	(0.050)	0.835	499
1999	0.185***	(0.052)	0.839	499
2000	0.164***	(0.053)	0.838	499
2001	0.076	(0.049)	0.840	499
2002	0.119**	(0.053)	0.836	499
2003	0.100*	(0.057)	0.837	499
2004	0.074	(0.056)	0.837	499
2005	0.057	(0.057)	0.833	499
2006	0.006	(0.054)	0.831	499
2007	0.025	(0.055)	0.830	499
2008	-0.014	(0.055)	0.827	499

Notes. *, ** and *** indicate significance at the 10, 5 and 1 percent levels respectively. Standard error estimates are robust to disturbances being heteroscedastic. Other controls included: School Enrollment; Population Per Squar Mile; Percent I.U.; Percent Other; and the Aid Ratio.

Source. KRC analysis based on PDE data

Appendix E: School Districts That Privatized Between 1992 and 2001

This appendix identifies the 29 school districts that substantially increased their use of contracted carriers between 1992 and 2001 and presents the results of regression analysis of the change in total spending in these districts after privatization.

Table E1.

The Following School Districts in the Year Listed Increased Substantially Their Use of Contracted Carriers.

School District	Year	School District	Year
Annville-Cleona SD	1997	Harrisburg City SD	1998
Boyertown Area SD	1999	Manheim Twp SD	2000
Bristol Twp SD	1993	Mount Carmel Area SD	1994
Cameron Co SD	1998	Palisades SD	1993
Central York SD	1995	Panther Valley SD	1998
Cocalico SD	1997	Perkiomen Valley SD	1995
Conestoga Valley SD	1996	Purchase Line SD	2000
Cornwall-Lebanon SD	1993	Reading SD	1993
Cranberry Area SD	1993	Sharon City SD	2001
Dallastown Area SD	1999	Shikellamy SD	1998
East Allegheny SD	1992	Southeast Delco SD	1992
Eastern Lancaster Co SD	1997	Tamaqua Area SD	1999
Eastern Lebanon Co SD	1994	Williamsburg Comm SD	1999
Eastern York SD	2001	Yough SD	1999
Governor Mifflin SD	1994		

Table E2 presents the regression coefficients for our analysis of the change in spending in the 29 districts that substantially increased their use of contracted carriers. The coefficients are largely identical to those discussed in the main body of the paper.

The chief exception is the substitution of an indicator variable After Privatization for the continuous variable Percent Contracted Out. The variable After Privatization is equal to 1 in the 29 school districts listed in Table E1 in every year after and including the first year of privatization in those districts; it is equal to 0 in those 29 school districts prior to privatization and zero in the remaining 471 school districts. The coefficient on After Privatization in column 2 is positive and significant indicating that total spending on student transportation was 13% percent higher in these 29 districts after privatization controlling for differences in factors like school enrollment and fuel costs.

Table E2.

	Total Student Transportation Spending	School District Student Transportation Spending	State Student Transportation Spending
	b/se	b/se	b/se
School Enrollment	0.807***	0.742***	0.897***
	(0.044)	(0.064)	(0.057)
Fuel Costs	0.002***	0.003***	0.002***
	(0.000)	(0.000)	(0.000)
Percent I.U.	0.313***	0.705***	-0.368***
	(0.099)	(0.114)	(0.114)
Percent Other	-0.175***	-0.135**	-0.181***
	(0.043)	(0.059)	(0.056)
Aidratio: bottom quartile	0.022	0.272***	-0.191***
	(0.029)	(0.043)	(0.038)
Aidratio: 2nd quartile	-0.032	0.133***	-0.150***
	(0.026)	(0.037)	(0.033)
Aidratio: 3rd quartile	-0.041**	0.085***	-0.111***
	(0.016)	(0.023)	(0.022)
After Privatization	0.132***	-0.073	0.309***
	(0.038)	(0.060)	(0.039)
Constant	7.388***	6.717***	6.211***
	(0.344)	(0.499)	(0.450)
R-sqr-within	0.550	0.274	0.366
R-sqr-between	0.722	0.776	0.466
R-sqr-overall	0.702	0.717	0.459
N	11485	11446	11456

Notes. *, ** and *** indicate significance at the 10, 5 and 1 percent levels respectively. Standard error estimates are robust to disturbances being heteroscedastic.

Source. KRC based on PDE data

Appendix F: Contracting Out Shares by School District

Table F1.

Percent Contracted Out and Enrollment by School District 2004-2008

School District	Percent	Contracted Out Enrollment	County
Bermudian Springs SD	69%	2,195	Adams
Conewago Valley SD	64%	3,821	Adams
Fairfield Area SD	75%	1,275	Adams
Gettysburg Area SD	83%	3,397	Adams
Littlestown Area SD	0%	2,364	Adams
Upper Adams SD	75%	1,839	Adams
Allegheny Valley SD	96%	1,211	Allegheny
Avonworth SD	99%	1,343	Allegheny
Baldwin-Whitehall SD	0%	4,422	Allegheny
Bethel Park SD	1%	5,098	Allegheny
Brentwood Borough SD	98%	1,336	Allegheny
Carlynton SD	96%	1,584	Allegheny
Chartiers Valley SD	20%	3,509	Allegheny
Clairton City SD	98%	972	Allegheny
Cornell SD	84%	735	Allegheny
Deer Lakes SD	38%	2,091	Allegheny
Duquesne City SD	98%	886	Allegheny
East Allegheny SD	91%	1,977	Allegheny
Elizabeth Forward SD	100%	2,882	Allegheny
Fox Chapel Area SD	83%	4,643	Allegheny
Gateway SD	96%	4,359	Allegheny
Hampton Township SD	96%	3,167	Allegheny
Highlands SD	97%	2,902	Allegheny
Keystone Oaks SD	98%	2,422	Allegheny
McKeesport Area SD	79%	4,568	Allegheny
Montour SD	0%	3,254	Allegheny
Moon Area SD	92%	3,838	Allegheny
Mt Lebanon SD	58%	5,479	Allegheny
North Allegheny SD	6%	8,156	Allegheny
North Hills SD	68%	4,754	Allegheny
Northgate SD	96%	1,475	Allegheny
Penn Hills SD	11%	5,678	Allegheny
Pine-Richland SD	93%	4,219	Allegheny
Pittsburgh SD	66%	32,961	Allegheny
Plum Borough SD	0%	4,385	Allegheny
Quaker Valley SD	0%	1,943	Allegheny
Riverview SD	95%	1,225	Allegheny
Shaler Area SD	96%	5,482	Allegheny
South Allegheny SD	100%	1,781	Allegheny
South Fayette Township SD	8%	2,038	Allegheny
South Park SD	56%	2,248	Allegheny
Steel Valley SD	90%	2,222	Allegheny
Sto-Rox SD	90%	1,588	Allegheny
Upper Saint Clair SD	10%	4,133	Allegheny
West Allegheny SD	91%	3,284	Allegheny

West Jefferson Hills SD	92%	2,927	Allegheny
West Mifflin Area SD	95%	3,294	Allegheny
Wilkinsburg Borough SD	87%	1,698	Allegheny
Woodland Hills SD	92%	5,630	Allegheny
Apollo-Ridge SD	83%	1,640	Armstrong
Armstrong SD	91%	6,542	Armstrong
Freeport Area SD	99%	2,029	Armstrong
Leechburg Area SD	96%	904	Armstrong
Aliquippa SD	0%	1,390	Beaver
Ambridge Area SD	91%	3,058	Beaver
Beaver Area SD	98%	2,132	Beaver
Big Beaver Falls Area SD	99%	1,896	Beaver
Blackhawk SD	97%	2,808	Beaver
Central Valley	94%	2,746	Beaver
Freedom Area SD	98%	1,734	Beaver
Hopewell Area SD	1%	2,821	Beaver
Midland Borough SD	76%	456	Beaver
New Brighton Area SD	63%	1,902	Beaver
Riverside Beaver County SD	99%	1,842	Beaver
Rochester Area SD	99%	1,093	Beaver
South Side Area SD	92%	1,353	Beaver
Western Beaver County SD	90%	907	Beaver
Bedford Area SD	78%	2,367	Bedford
Chestnut Ridge SD	90%	1,781	Bedford
Everett Area SD	89%	1,540	Bedford
Northern Bedford County SD	94%	1,136	Bedford
Tussey Mountain SD	99%	1,233	Bedford
Antietam SD	26%	1,115	Berks
Boyertown Area SD	78%	7,090	Berks
Brandywine Heights Area SD	86%	1,975	Berks
Conrad Weiser Area SD	15%	2,929	Berks
Daniel Boone Area SD	93%	3,752	Berks
Exeter Township SD	0%	4,287	Berks
Fleetwood Area SD	96%	2,696	Berks
Governor Mifflin SD	89%	4,251	Berks
Hamburg Area SD	81%	2,697	Berks
Kutztown Area SD	69%	1,757	Berks
Muhlenberg SD	81%	3,255	Berks
Oley Valley SD	80%	2,078	Berks
Reading SD	26%	17,670	Berks
Schuylkill Valley SD	95%	2,002	Berks
Tulpehocken Area SD	93%	1,732	Berks
Twin Valley SD	92%	3,406	Berks
Wilson SD	0%	5,570	Berks
Wyomissing Area SD	71%	1,898	Berks
Altoona Area SD	35%	8,324	Blair
Bellwood-Antis SD	54%	1,355	Blair
Claysburg-Kimmel SD	100%	941	Blair
Hollidaysburg Area SD	78%	3,710	Blair
Spring Cove SD	83%	1,948	Blair
Tyrone Area SD	88%	1,896	Blair
Williamsburg Community SD	97%	574	Blair

Athens Area SD	**96%**	**2,424**	**Bradford**
Canton Area SD	**98%**	**1,136**	**Bradford**
Northeast Bradford SD	**98%**	**911**	**Bradford**
Sayre Area SD	**99%**	**1,226**	**Bradford**
Towanda Area SD	**94%**	**1,772**	**Bradford**
Troy Area SD	**96%**	**1,767**	**Bradford**
Wyalusing Area SD	**99%**	**1,470**	**Bradford**
Bensalem Township SD	**3%**	**6,838**	**Bucks**
Bristol Borough SD	**3%**	**1,330**	**Bucks**
Bristol Township SD	**86%**	**7,380**	**Bucks**
Centennial SD	**1%**	**6,306**	**Bucks**
Central Bucks SD	**29%**	**19,983**	**Bucks**
Council Rock SD	**88%**	**12,698**	**Bucks**
Morrisville Borough SD	**16%**	**992**	**Bucks**
Neshaminy SD	**1%**	**9,750**	**Bucks**
New Hope-Solebury SD	**74%**	**1,479**	**Bucks**
Palisades SD	**98%**	**2,140**	**Bucks**
Pennridge SD	**0%**	**7,355**	**Bucks**
Pennsbury SD	**1%**	**11,866**	**Bucks**
Quakertown Community SD	**97%**	**5,512**	**Bucks**
Butler Area SD	**92%**	**8,388**	**Butler**
Karns City Area SD	**80%**	**1,850**	**Butler**
Mars Area SD	**93%**	**2,968**	**Butler**
Moniteau SD	**96%**	**1,773**	**Butler**
Seneca Valley SD	**87%**	**7,723**	**Butler**
Slippery Rock Area SD	**90%**	**2,513**	**Butler**
South Butler County SD	**99%**	**2,938**	**Butler**
Blacklick Valley SD	**79%**	**706**	**Cambria**
Cambria Heights SD	**92%**	**1,526**	**Cambria**
Central Cambria SD	**87%**	**1,891**	**Cambria**
Conemaugh Valley SD	**89%**	**965**	**Cambria**
Ferndale Area SD	**96%**	**828**	**Cambria**
Forest Hills SD	**95%**	**2,283**	**Cambria**
Greater Johnstown SD	**100%**	**3,275**	**Cambria**
Northern Cambria SD	**97%**	**1,265**	**Cambria**
Penn Cambria SD	**99%**	**1,811**	**Cambria**
Portage Area SD	**97%**	**1,010**	**Cambria**
Richland SD	**99%**	**1,623**	**Cambria**
Westmont Hilltop SD	**100%**	**1,747**	**Cambria**
Cameron County SD	**93%**	**905**	**Cameron**
Jim Thorpe Area SD	**20%**	**2,131**	**Carbon**
Lehighton Area SD	**62%**	**2,571**	**Carbon**
Palmerton Area SD	**78%**	**2,092**	**Carbon**
Panther Valley SD	**59%**	**1,705**	**Carbon**
Weatherly Area SD	**68%**	**788**	**Carbon**
Bald Eagle Area SD	**95%**	**2,031**	**Centre**
Bellefonte Area SD	**71%**	**3,040**	**Centre**
Penns Valley Area SD	**92%**	**1,663**	**Centre**
State College Area SD	**48%**	**7,441**	**Centre**
Avon Grove SD	**94%**	**5,727**	**Chester**
Coatesville Area SD	**84%**	**8,418**	**Chester**
Downingtown Area SD	**93%**	**11,709**	**Chester**

Great Valley SD	90%	4,023	Chester
Kennett Consolidated SD	51%	4,254	Chester
Octorara Area SD	79%	2,761	Chester
Owen J Roberts SD	87%	4,678	Chester
Oxford Area SD	98%	3,876	Chester
Phoenixville Area SD	88%	3,788	Chester
Tredyffrin-Easttown SD	75%	5,966	Chester
Unionville-Chadds Ford SD	0%	4,058	Chester
West Chester Area SD	89%	12,266	Chester
Allegheny-Clarion Valley SD	86%	970	Clarion
Clarion Area SD	90%	920	Clarion
Clarion-Limestone Area SD	95%	1,102	Clarion
Keystone SD	93%	1,219	Clarion
North Clarion County SD	86%	684	Clarion
Redbank Valley SD	78%	1,353	Clarion
Union SD	78%	784	Clarion
Clearfield Area SD	80%	2,847	Clearfield
Curwensville Area SD	89%	1,234	Clearfield
Dubois Area SD	95%	4,503	Clearfield
Glendale SD	90%	886	Clearfield
Harmony Area SD	97%	379	Clearfield
Moshannon Valley SD	82%	1,110	Clearfield
Philipsburg-Osceola Area SD	87%	2,103	Clearfield
West Branch Area SD	93%	1,335	Clearfield
Keystone Central SD	95%	4,842	Clinton
Benton Area SD	100%	816	Columbia
Berwick Area SD	86%	3,481	Columbia
Bloomsburg Area SD	99%	1,858	Columbia
Central Columbia SD	86%	2,257	Columbia
Millville Area SD	97%	809	Columbia
Southern Columbia Area SD	0%	1,500	Columbia
Conneaut SD	95%	2,796	Crawford
Crawford Central SD	95%	4,153	Crawford
Penncrest SD	83%	3,954	Crawford
Big Spring SD	95%	3,138	Cumberland
Camp Hill SD	23%	1,145	Cumberland
Carlisle Area SD	79%	4,868	Cumberland
Cumberland Valley SD	87%	7,758	Cumberland
East Pennsboro Area SD	89%	2,889	Cumberland
Mechanicsburg Area SD	81%	3,652	Cumberland
Shippensburg Area SD	92%	3,392	Cumberland
South Middleton SD	99%	2,217	Cumberland
Central Dauphin SD	2%	11,691	Dauphin
Derry Township SD	11%	3,564	Dauphin
Halifax Area SD	98%	1,263	Dauphin
Harrisburg City SD	86%	8,366	Dauphin
Lower Dauphin SD	97%	4,075	Dauphin
Middletown Area SD	89%	2,584	Dauphin
Millersburg Area SD	90%	954	Dauphin
Steelton-Highspire SD	62%	1,384	Dauphin
Susquehanna Township SD	92%	3,251	Dauphin
Upper Dauphin Area SD	93%	1,333	Dauphin

Chester-Upland SD	**46%**	**7,216**	**Delaware**
Chichester SD	**2%**	**3,665**	**Delaware**
Garnet Valley SD	**0%**	**4,414**	**Delaware**
Haverford Township SD	**0%**	**5,642**	**Delaware**
Interboro SD	**0%**	**3,962**	**Delaware**
Marple Newtown SD	**0%**	**3,545**	**Delaware**
Penn-Delco SD	**0%**	**3,405**	**Delaware**
Radnor Township SD	**1%**	**3,533**	**Delaware**
Ridley SD	**0%**	**5,876**	**Delaware**
Rose Tree Media SD	**8%**	**3,995**	**Delaware**
Southeast Delco SD	**9%**	**4,119**	**Delaware**
Springfield SD	**2%**	**3,429**	**Delaware**
Upper Darby SD	**1%**	**12,374**	**Delaware**
Wallingford-Swarthmore SD	**3%**	**3,582**	**Delaware**
William Penn SD	**6%**	**5,756**	**Delaware**
Johnsonburg Area SD	**94%**	**740**	**Elk**
Ridgway Area SD	**97%**	**1,059**	**Elk**
Saint Marys Area SD	**95%**	**2,502**	**Elk**
Corry Area SD	**91%**	**2,448**	**Erie**
Erie City SD	**16%**	**13,532**	**Erie**
Fairview SD	**4%**	**1,649**	**Erie**
Fort LeBoeuf SD	**0%**	**2,329**	**Erie**
General McLane SD	**0%**	**2,386**	**Erie**
Girard SD	**18%**	**2,073**	**Erie**
Harbor Creek SD	**93%**	**2,142**	**Erie**
Iroquois SD	**93%**	**1,267**	**Erie**
Millcreek Township SD	**81%**	**7,385**	**Erie**
North East SD	**0%**	**1,925**	**Erie**
Northwestern SD	**92%**	**1,842**	**Erie**
Union City Area SD	**97%**	**1,373**	**Erie**
Wattsburg Area SD	**8%**	**1,670**	**Erie**
Albert Gallatin Area SD	**96%**	**3,977**	**Fayette**
Brownsville Area SD	**99%**	**2,039**	**Fayette**
Connellsville Area SD	**95%**	**5,616**	**Fayette**
Frazier SD	**87%**	**1,178**	**Fayette**
Laurel Highlands SD	**100%**	**3,649**	**Fayette**
Uniontown Area SD	**97%**	**3,535**	**Fayette**
Forest Area SD	**79%**	**687**	**Forest**
Chambersburg Area SD	**68%**	**8,533**	**Franklin**
Fannett-Metal SD	**100%**	**594**	**Franklin**
Greencastle-Antrim SD	**6%**	**2,846**	**Franklin**
Tuscarora SD	**96%**	**2,768**	**Franklin**
Waynesboro Area SD	**97%**	**4,209**	**Franklin**
Central Fulton SD	**98%**	**1,054**	**Fulton**
Forbes Road SD	**99%**	**496**	**Fulton**
Southern Fulton SD	**97%**	**935**	**Fulton**
Carmichaels Area SD	**93%**	**1,129**	**Greene**
Central Greene SD	**94%**	**2,265**	**Greene**
Jefferson-Morgan SD	**88%**	**930**	**Greene**
Southeastern Greene SD	**95%**	**725**	**Greene**
West Greene SD	**97%**	**944**	**Greene**
Huntingdon Area SD	**98%**	**2,345**	**Huntingdon**

Juniata Valley SD	96%	850	Huntingdon
Mount Union Area SD	97%	1,571	Huntingdon
Southern Huntingdon Cnty SD	91%	1,351	Huntingdon
Blairsville-Saltsburg SD	81%	2,106	Indiana
Homer-Center SD	95%	957	Indiana
Indiana Area SD	91%	3,093	Indiana
Marion Center Area SD	89%	1,584	Indiana
Penns Manor Area SD	89%	1,022	Indiana
Purchase Line SD	99%	1,188	Indiana
United SD	98%	1,270	Indiana
Brockway Area SD	99%	1,204	Jefferson
Brookville Area SD	99%	1,891	Jefferson
Punxsutawney Area SD	100%	2,802	Jefferson
Juniata County SD	94%	3,171	Juniata
Abington Heights SD	65%	3,666	Lackawanna
Carbondale Area SD	79%	1,643	Lackawanna
Dunmore SD	72%	1,724	Lackawanna
Lakeland SD	89%	1,691	Lackawanna
Mid Valley SD	70%	1,658	Lackawanna
North Pocono SD	97%	3,286	Lackawanna
Old Forge SD	64%	927	Lackawanna
Riverside SD	78%	1,544	Lackawanna
Scranton SD	81%	9,497	Lackawanna
Valley View SD	89%	2,633	Lackawanna
Cocalico SD	89%	3,614	Lancaster
Columbia Borough SD	0%	1,515	Lancaster
Conestoga Valley SD	72%	4,038	Lancaster
Donegal SD	82%	2,793	Lancaster
Eastern Lancaster County SD	90%	3,483	Lancaster
Elizabethtown Area SD	79%	3,986	Lancaster
Ephrata Area SD	80%	4,129	Lancaster
Hempfield SD	87%	7,389	Lancaster
Lampeter-Strasburg SD	77%	3,314	Lancaster
Lancaster SD	81%	11,443	Lancaster
Manheim Central SD	88%	3,104	Lancaster
Manheim Township SD	88%	5,597	Lancaster
Penn Manor SD	90%	5,427	Lancaster
Pequea Valley SD	92%	1,945	Lancaster
Solanco SD	76%	4,004	Lancaster
Warwick SD	85%	4,738	Lancaster
Ellwood City Area SD	83%	2,244	Lawrence
Laurel SD	4%	1,433	Lawrence
Mohawk Area SD	2%	1,949	Lawrence
Neshannock Township SD	0%	1,378	Lawrence
New Castle Area SD	95%	3,930	Lawrence
Shenango Area SD	68%	1,415	Lawrence
Union Area SD	1%	884	Lawrence
Wilmington Area SD	98%	1,579	Lawrence
Annville-Cleona SD	93%	1,670	Lebanon
Cornwall-Lebanon SD	94%	4,873	Lebanon
Eastern Lebanon County SD	95%	2,483	Lebanon
Lebanon SD	86%	4,463	Lebanon

Northern Lebanon SD	99%	2,544	Lebanon
Palmyra Area SD	96%	3,126	Lebanon
Allentown City SD	72%	18,181	Lehigh
Catasauqua Area SD	0%	1,708	Lehigh
East Penn SD	90%	7,767	Lehigh
Northern Lehigh SD	68%	2,089	Lehigh
Northwestern Lehigh SD	0%	2,390	Lehigh
Parkland SD	1%	9,076	Lehigh
Salisbury Township SD	76%	1,848	Lehigh
Southern Lehigh SD	85%	3,087	Lehigh
Whitehall-Coplay SD	0%	4,222	Lehigh
Crestwood SD	77%	3,080	Luzerne
Dallas SD	66%	2,729	Luzerne
Greater Nanticoke Area SD	94%	2,255	Luzerne
Hanover Area SD	78%	2,089	Luzerne
Hazleton Area SD	63%	9,913	Luzerne
Lake-Lehman SD	95%	2,218	Luzerne
Northwest Area SD \1	99%	1,463	Luzerne
Pittston Area SD	91%	3,288	Luzerne
Wilkes-Barre Area SD	66%	7,294	Luzerne
Wyoming Area SD	76%	2,669	Luzerne
Wyoming Valley West SD	71%	5,531	Luzerne
East Lycoming SD	98%	1,742	Lycoming
Jersey Shore Area SD	95%	2,968	Lycoming
Loyalsock Township SD	0%	1,408	Lycoming
Montgomery Area SD	93%	960	Lycoming
Montoursville Area SD	99%	2,098	Lycoming
Muncy SD	97%	1,063	Lycoming
South Williamsport Area SD	95%	1,440	Lycoming
Williamsport Area SD	0%	5,899	Lycoming
Bradford Area SD	2%	2,930	McKean
Kane Area SD	92%	1,321	McKean
Otto-Eldred SD	97%	804	McKean
Port Allegany SD	93%	1,104	McKean
Smethport Area SD	95%	1,003	McKean
Commodore Perry SD	99%	667	Mercer
Farrell Area SD	72%	1,032	Mercer
Greenville Area SD	100%	1,648	Mercer
Grove City Area SD	95%	2,397	Mercer
Hermitage SD	95%	2,239	Mercer
Jamestown Area SD	100%	674	Mercer
Lakeview SD	78%	1,339	Mercer
Mercer Area SD	84%	1,492	Mercer
Reynolds SD	89%	1,485	Mercer
Sharon City SD	74%	2,360	Mercer
Sharpsville Area SD	99%	1,368	Mercer
West Middlesex Area SD	3%	1,208	Mercer
Mifflin County SD	98%	5,934	Mifflin
East Stroudsburg Area SD	9%	8,173	Monroe
Pleasant Valley SD	0%	7,091	Monroe
Pocono Mountain SD	0%	12,037	Monroe
Stroudsburg Area SD	0%	5,931	Monroe

Abington SD	24%	7,514	Montgomery
Cheltenham Township SD	94%	4,636	Montgomery
Colonial SD	78%	4,699	Montgomery
Hatboro-Horsham SD	2%	5,468	Montgomery
Jenkintown SD	41%	587	Montgomery
Lower Merion SD	1%	6,862	Montgomery
Lower Moreland Township SD	90%	1,952	Montgomery
Methacton SD	2%	5,464	Montgomery
Norristown Area SD	63%	7,221	Montgomery
North Penn SD	25%	13,170	Montgomery
Perkiomen Valley SD	100%	5,374	Montgomery
Pottsgrove SD	10%	3,329	Montgomery
Pottstown SD	55%	3,360	Montgomery
Souderton Area SD	87%	6,915	Montgomery
Springfield Township SD	3%	2,111	Montgomery
Spring-Ford Area SD	87%	7,184	Montgomery
Upper Dublin SD	2%	4,456	Montgomery
Upper Merion Area SD	1%	3,553	Montgomery
Upper Moreland Township SD	5%	3,156	Montgomery
Upper Perkiomen SD	97%	3,411	Montgomery
Wissahickon SD	19%	4,644	Montgomery
Danville Area SD	91%	2,652	Montour
Bangor Area SD	58%	3,680	Northampton
Bethlehem Area SD	3%	15,713	Northampton
Easton Area SD	0%	8,944	Northampton
Nazareth Area SD	95%	4,692	Northampton
Northampton Area SD	89%	5,940	Northampton
Pen Argyl Area SD	79%	1,966	Northampton
Saucon Valley SD	0%	2,431	Northampton
Wilson Area SD	0%	2,285	Northampton
Line Mountain SD	92%	1,277	Northumberland
Milton Area SD	85%	2,366	Northumberland
Mount Carmel Area SD	80%	1,771	Northumberland
Shamokin Area SD	76%	2,574	Northumberland
Shikellamy SD	88%	3,197	Northumberland
Warrior Run SD	83%	1,777	Northumberland
Greenwood SD	97%	868	Perry
Newport SD	93%	1,241	Perry
Susquenita SD	99%	2,229	Perry
West Perry SD	91%	2,830	Perry
Philadelphia City SD	31%	208,705	Philadelphia
Delaware Valley SD	72%	5,703	Pike
Austin Area SD	68%	235	Potter
Coudersport Area SD	80%	950	Potter
Galeton Area SD	86%	417	Potter
Northern Potter SD	92%	680	Potter
Oswayo Valley SD	91%	565	Potter
Blue Mountain SD	90%	2,982	Schuylkill
Mahanoy Area SD	0%	1,152	Schuylkill
Minersville Area SD	81%	1,216	Schuylkill
North Schuylkill SD	82%	2,033	Schuylkill
Pine Grove Area SD	94%	1,744	Schuylkill

Pottsville Area SD	1%	2,850	Schuylkill
Saint Clair Area SD	79%	869	Schuylkill
Schuylkill Haven Area SD	82%	1,433	Schuylkill
Shenandoah Valley SD	0%	1,116	Schuylkill
Tamaqua Area SD	85%	2,211	Schuylkill
Tri-Valley SD	86%	933	Schuylkill
Williams Valley SD	96%	1,177	Schuylkill
Midd-West SD	99%	2,431	Snyder
Selinsgrove Area SD	96%	2,820	Snyder
Berlin Brothersvalley SD	100%	956	Somerset
Conemaugh Township Area SD	99%	1,114	Somerset
Meyersdale Area SD	99%	1,011	Somerset
North Star SD	99%	1,348	Somerset
Rockwood Area SD	100%	890	Somerset
Salisbury-Elk Lick SD	100%	369	Somerset
Shade-Central City SD	99%	627	Somerset
Shanksville-Stonycreek SD	97%	463	Somerset
Somerset Area SD	82%	2,667	Somerset
Turkeyfoot Valley Area SD	100%	387	Somerset
Windber Area SD	89%	1,427	Somerset
Sullivan County SD	100%	784	Sullivan
Blue Ridge SD	97%	1,238	Susquehanna
Elk Lake SD	98%	1,453	Susquehanna
Forest City Regional SD	96%	925	Susquehanna
Montrose Area SD	96%	1,928	Susquehanna
Mountain View SD	100%	1,404	Susquehanna
Susquehanna Community SD	96%	996	Susquehanna
Northern Tioga SD	99%	2,458	Tioga
Southern Tioga SD	97%	2,226	Tioga
Wellsboro Area SD	98%	1,600	Tioga
Lewisburg Area SD	87%	1,889	Union
Mifflinburg Area SD	0%	2,435	Union
Cranberry Area SD	94%	1,416	Venango
Franklin Area SD	88%	2,347	Venango
Oil City Area SD	92%	2,477	Venango
Titusville Area SD	79%	2,356	Venango
Valley Grove SD	70%	1,022	Venango
Warren County SD	91%	5,884	Warren
Avella Area SD	97%	743	Washington
Bentworth SD	29%	1,221	Washington
Bethlehem-Center SD	99%	1,414	Washington
Burgettstown Area SD	17%	1,582	Washington
California Area SD	93%	1,026	Washington
Canon-McMillan SD	27%	4,587	Washington
Charleroi SD	17%	1,685	Washington
Chartiers-Houston SD	74%	1,207	Washington
Fort Cherry SD	95%	1,276	Washington
McGuffey SD	80%	2,264	Washington
Peters Township SD	43%	4,190	Washington
Ringgold SD	17%	3,584	Washington
Trinity Area SD	90%	3,752	Washington
Washington SD	88%	1,953	Washington

Wallenpaupack Area SD	98%	4,019	Wayne
Wayne Highlands SD	92%	3,317	Wayne
Western Wayne SD	98%	2,558	Wayne
Belle Vernon Area SD	13%	2,945	Westmoreland
Burrell SD	99%	2,146	Westmoreland
Derry Area SD	99%	2,655	Westmoreland
Franklin Regional SD	87%	3,805	Westmoreland
Greater Latrobe SD	87%	4,350	Westmoreland
Greensburg Salem SD	87%	3,370	Westmoreland
Hempfield Area SD	32%	6,651	Westmoreland
Jeannette City SD	73%	1,372	Westmoreland
Kiski Area SD	92%	4,460	Westmoreland
Ligonier Valley SD	99%	2,110	Westmoreland
Monessen City SD	84%	1,057	Westmoreland
Mount Pleasant Area SD	91%	2,501	Westmoreland
New Kensington-Arnold SD	87%	2,477	Westmoreland
Norwin SD	94%	5,316	Westmoreland
Penn-Trafford SD	96%	4,709	Westmoreland
Southmoreland SD	85%	2,289	Westmoreland
Yough SD	69%	2,548	Westmoreland
Lackawanna Trail SD	98%	1,330	Wyoming
Tunkhannock Area SD	99%	3,075	Wyoming
Central York SD	73%	5,360	York
Dallastown Area SD	81%	5,917	York
Dover Area SD	76%	3,772	York
Eastern York SD	62%	2,830	York
Hanover Public SD	0%	1,747	York
Northeastern York SD	77%	3,570	York
Northern York County SD	76%	3,241	York
Red Lion Area SD	74%	6,081	York
South Eastern SD	75%	3,432	York
South Western SD	0%	4,205	York
Southern York County SD	89%	3,380	York
Spring Grove Area SD	83%	4,074	York
West Shore SD	1%	8,282	York
West York Area SD	86%	3,370	York
York City SD	16%	7,515	York
York Suburban SD	73%	2,877	York

Note. No data was available for the Bryn Athyn SD

Source. Keystone Research Center based on Pennsylvania Department of Education data

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